

Patent claims

1. A filter bag for a vacuum cleaner, comprising:

a substantially tubular bag made from a bag material having at least one non-woven layer, the bag having a closed free end area and an at least partially closed area opposite the closed free end area; and

a retaining plate, wherein edges of the bag are at least partially interconnected by a weld seam to form the at least partially closed area, and wherein a bottom of the bag is formed by at least partially interconnecting plies of the bag material at least in areas in which plies of the bag material lie one above the other.

2. The filter bag according to claim 1, wherein the weld seam in the bottom extends over an entire width of the bottom.

3. The filter bag according to claim 1, wherein the plies are interconnected by at least one of (i) gluing and (ii) welding.

4. The filter bag according to claim 3, wherein at least one of the gluing and the welding is linear.

5. The filter bag according to claim 1, wherein the bottom has a substantially square shape.

6. The filter bag according to claim 1, wherein the bottom has a substantially rectangular shape.

7. The filter bag according to claim 1, wherein, starting from the bottom to the closed free end area, at least one pre-crease is introduced in the bag material.

8. The filter bag according to claim 5, wherein, starting from respective corners of the bottom to the closed free end area, pre-creases are introduced into the bag material.

9. The filter bag according to claim 1, wherein, starting from the weld seam in the bottom, at least one pre-crease is introduced into the bag material up to the closed free end area.

10. The filter bag according to claim 1, wherein a pre-crease is introduced into the bag material substantially parallel to the weld seam in the bottom.

11. The filter bag according to claim 10, wherein the pre-crease is introduced into the bag material spaced from the weld seam by a distance corresponding to approximately a width of the bottom.

5 12. The filter bag according to claim 1, wherein the retaining plate is arranged on the bottom to at least partially cover the bottom, the retaining plate having at least one through hole.

10 13. The filter bag according to claim 12, wherein the retaining plate covers an entire area of the bottom.

15 14. The filter bag according to claim 1, wherein the retaining plate is arranged on an area spread between the closed free end area and the at least partially closed end area, the retaining plate having at least one through hole.

15. The filter bag according to claim 14, wherein the retaining plate is arranged in a region of the bottom.

20 16. The filter bag according to claim 1, wherein the retaining plate is connected to the filter bag using at least one of gluing and welding.

25 17. The filter bag according to claim 1, wherein the retaining plate is formed from a plastic material.

18. The filter bag according to claim 1, wherein the retaining plate is formed from a cardboard.

30 19. The filter bag according to claim 1, wherein the bag material is a non-woven composite material.

20. A method for manufacturing a filter bag according to claim 1, comprising of steps:

35 a) producing a substantially tubular bag having at least partially closed area on a closed side of the bag;

40 b) introducing a die from an open side of the bag in a direction of the closed side of the bag so that a bottom is produced by folding the bag over the die; and

c) connecting plies in the bottom which, as a result of the folding, are arranged one above the other.

45 21. The method according to claim 20, wherein step a) is performed in cycles, a tube being produced from a filter material and the open side being closed.

22. The method according to claim 20, wherein, wherein, while the at least partially closed area is being produced in the step a), a free end of a previously produced bag is simultaneously closed.

23. The method according to claim 22, further comprising separating from one another bags produced in a single working cycle.

24. The method according to claim 23, wherein the separating step takes place mechanically.

25. The method according to claim 20, wherein pre-creases are introduced during step a).

26. The method according to claim 25, wherein the pre-creases are introduced by at least one of a suitable forming tool and welding.

27. The method according to claim 20, wherein the die is used as a sound reflector for a sonotrode.

28. The method according to claim 20, wherein the die is used as a sonotrode for a sound reflector.

29. The method according to claim 20, wherein, during step a), an opening is introduced into the filter material forming a web.